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Threading a Laser Through the Eye of a Needle 2.0: Evaluating Coupling Performance of Telecom Fibre Cables for use in a Cost-Effective Free Space Optical (FSO) System under Atmospheric Turbulence.

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This research is dedicated to the development of a cost-effective Free Space Optical (FSO) system using standard telecom fibre cables. These cables, which include the single-mode and five multimode fibre cables (OM1, OM2, OM3, OM4, and OM5), are selected for their wide availability and cost-effectiveness. This study assesses the coupling performance of these fibre cables in the presence of atmospheric turbulence, by subjecting them to controlled turbulence effects using a spatial light modulator (SLM). Key turbulence effects such as beam wander, angle of arrival fluctuations, spatial coherence loss, and scintillation are analysed. The findings of this research contribute to the advancement of an accessible FSO system capable of providing connectivity prior to fibre cable installation, thereby playing a crucial role in bridging the digital divide.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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